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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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CIENA CORPORATION 1201 WINTERSON ROAD LINTHICUM, MD 21090			JAGANNATHAN, MELANIE	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/933,991	Applicant(s) SAHA ET AL.	
	Examiner Melanie Jagannathan	Art Unit 2666	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/14/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-67 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-67 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

- A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/14/2005 has been entered.
- Claims 1-67 are currently pending.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 5, 9, 10-11, 15-18, 21, 25-26, 30-33, 36, 40-42, 46-49, 52, 56-57, 61-62, 65-67 are rejected under 35 U.S.C. 102(e) as being anticipated by Azizoglu et al. US 6,430,201.

Regarding claims 1, 65-67, the claimed apparatus for transmitting a sub-rate data stream over a communication network that uses a selected network protocol, wherein

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the sub-rate data stream has an associated sub-rate protocol is disclosed by transmitter in system where multiple Gigabit Ethernet and Fiber Channel signals are multiplexed and transported on WDM communications link using SONET signaling. See column 2, lines 66-67, column 3, lines 1-14, column 6, lines 19-24. The claimed rate adapter coupled to receive the uninterpreted sub-rate data stream and operable to adapt a rate characteristic associated with sub-rate protocol to a rate characteristic associated with selected network protocol to generate a rate-adapted data stream from sub-rate data stream is disclosed by interleaver (Figure 3, element 30) which receives 8-bit parallel streams and stores them in FIFO buffers (elements 32-1, 32-2, 32-3, and 32-4). Interleaving logic (element 34-1) packetizes the streams from the buffers into fixed-size packets using statistical multiplexing. The claimed payload and network framer coupled to receive the rate-adapted data stream and operable to frame the rate-adapted stream into a payload for transmission over the communication network using selected network protocol is disclosed by fixed size packets from buffers in interleaver are sent to a SONET framer device (element 36).

Regarding claim 2, the claimed de-serializer having logic to receive a serial version of sub-rate data stream and form sub-rate data stream is disclosed by input streams (GbE or FC) are converted into 10-bit parallel streams by serializer/de-serializer (elements 20-1, 20-2). See column 4, lines 38-42.

Regarding claim 5, the claimed FIFO memory to provide storage for sub-rate data stream is disclosed by FIFO buffers in interleaver (Figure 3, element 30). See column 4, lines 63-67, column 5, lines 1-4.

Regarding claim 9, the claimed network framer is disclosed by SONET framer (Figure 2, element 26, Figure 3, element 36).

Regarding claims 10, 15-16, the claimed apparatus comprising payload de-framer coupled to receive a payload transmitted over network using selected network protocol and to de-frame payload into rate-adapted data stream that is representative of uninterpreted sub-rate data stream and claimed rate adapter to receive rate-adapted stream and operable to adapt a rate characteristic associated with selected network protocol to a rate characteristic associated with sub-rate protocol to generate the sub-rate data stream is disclosed by on receive side (Figure 4) a SONET framer (Figure 4, element 36) removes SONET overhead and de-interleaver separates packets belonging to different streams using address byte in packet headers and codecs re-insert run-length code. See column 6, lines 4-18.

Regarding claim 11, the claimed serializer is disclosed by serializer/de-serializer (Figure 4, elements 20-1,20-2).

Regarding claims 17, 25-26, 30-31, the claimed system comprising transmit rate adapter and payload framer located at a source network element is disclosed by transmitter in system where multiple Gigabit Ethernet and Fiber Channel signals are multiplexed and transported on WDM communications link using SONET signaling. See column 2, lines 66-67, column 3, lines 1-14, column 6, lines 19-24. The claimed rate adapter coupled to receive the uninterpreted sub-rate data stream and operable to adapt a rate characteristic associated with sub-rate protocol to a rate characteristic associated with selected network protocol to generate an uninterpreted rate-adapted

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data stream from uninterpreted sub-rate data stream is disclosed by interleaver (Figure 3, element 30) which receives 8-bit parallel streams and stores them in FIFO buffers (elements 32-1, 32-2, 32-3, and 32-4). Interleaving logic (element 34-1) packetizes the streams from the buffers into fixed-size packets using statistical multiplexing. The claimed payload and network framer coupled to receive the uninterpreted rate-adapted data stream and operable to frame the rate-adapted stream into a payload for transmission over the communication network using selected network protocol is disclosed by fixed size packets from buffers in interleaver are sent to a SONET framer device (element 36).

The claimed payload de-framer located at destination network element that is coupled to receive the payload transmitted over network using selected network protocol and to de-frame the payload into the uninterpreted rate-adapted data stream that is representative of uninterpreted sub-rate data stream is disclosed by at receive side (Figure 4), a SONET framer (Figure 4, element 36) removes SONET overhead from streams from de-serializer (elements 20-1,20-2).

The claimed receive rate adapter at destination network element that is coupled to receive the uninterpreted rate-adapted stream and operable to, without interpretation, adapt a rate characteristic associated with a selected network protocol to a rate characteristic associated with a sub-rate protocol to generate the uninterpreted sub-rate data stream from uninterpreted rate-adapted data stream is disclosed by at receive side (Figure 4), a de-interleaver separates packets belonging to different streams using address byte in packet headers. See column 6, lines 4-18.

Regarding claim 18, the claimed de-serializer having logic to receive a serial version of sub-rate data stream and form sub-rate data stream is disclosed by input streams (GbE or FC) are converted into 10-bit parallel streams by serializer/de-serializer (elements 20-1, 20-2). See column 4, lines 38-42.

Regarding claim 21, the claimed FIFO memory to provide storage for sub-rate data stream is disclosed by FIFO buffers in interleaver (Figure 3, element 30). See column 4, lines 63-67, column 5, lines 1-4.

Regarding claims 32, 40, the claimed method for transmitting sub-rate data stream comprising steps of adapting a rate characteristic associated with an uninterpreted sub-rate protocol to a rate characteristic associated with selected network protocol, without interpretation, to generate an uninterpreted rate-adapted data stream from sub-rate data stream is disclosed by multiple Gigabit Ethernet and Fiber Channel signals are multiplexed and transported on WDM communications link using SONET signaling. See column 2, lines 66-67, column 3, lines 1-14, column 6, lines 19-24. The claimed adapting a rate characteristic associated with sub-rate protocol to a rate characteristic associated with selected network protocol to generate an uninterpreted rate-adapted data stream from uninterpreted sub-rate data stream is disclosed by interleaver (Figure 3, element 30) which receives 8-bit parallel streams and stores them in FIFO buffers (elements 32-1, 32-2, 32-3, and 32-4). Interleaving logic (element 34-1) packetizes the streams from the buffers into fixed-size packets using statistical multiplexing. The claimed framing the uninterpreted rate adapted stream into payload

for transmission is disclosed by fixed size packets from buffers in interleaver are sent to a SONET framer device (element 36).

Regarding claim 33, the claimed de-serializing a serial version of sub-rate data stream and form sub-rate data stream is disclosed by input streams (GbE or FC) are converted into 10-bit parallel streams by serializer/de-serializer (Figure 3, elements 20-1, 20-2). See column 4, lines 38-42.

Regarding claim 36, the claimed FIFO memory to provide storage for sub-rate data stream is disclosed by FIFO buffers in interleaver (Figure 3, element 30). See column 4, lines 63-67, column 5, lines 1-4.

Regarding claims 41, 46-47, the claimed method for receiving a sub-rate stream comprising de-framing payload into rate-adapted data stream that is representative of uninterpreted sub-rate data stream and adapting a rate characteristic associated with selected network protocol to a rate characteristic associated with sub-rate protocol to generate the sub-rate data stream is disclosed by on receive side (Figure 4) a SONET framer (Figure 4, element 36) removes SONET overhead and de-interleaver separates packets belonging to different streams using address byte in packet headers. See column 6, lines 4-18.

Regarding claim 42, the claimed serializing is disclosed by serializer/de-serializer at receive side (Figure 4, elements Serdes).

Regarding claim 48, 56, 61-62, the claimed method for transporting sub-rate data stream comprising steps of adapting a rate characteristic associated with sub-rate protocol to a rate characteristic associated with selected network protocol to generate a

rate-adapted data stream from uninterpreted sub-rate data stream is disclosed by multiple Gigabit Ethernet and Fiber Channel signals are multiplexed and transported on WDM communications link using SONET signaling. See column 2, lines 66-67, column 3, lines 1-14, column 6, lines 19-24. The claimed adapting a rate characteristic associated with sub-rate protocol to a rate characteristic associated with selected network protocol to generate an uninterpreted rate-adapted data stream from uninterpreted sub-rate data stream is disclosed by interleaver (Figure 3, element 30) which receives 8-bit parallel streams and stores them in FIFO buffers (elements 32-1, 32-2, 32-3, and 32-4). Interleaving logic (element 34-1) packetizes the streams from the buffers into fixed-size packets using statistical multiplexing. The claimed framing the uninterpreted rate adapted stream into payload for transmission is disclosed by fixed size packets from buffers in interleaver are sent to a SONET framer device (element 36).

The claimed de-framing payload into rate-adapted data stream that is representative of sub-rate data stream and adapting a rate characteristic associated with selected network protocol to a rate characteristic associated with sub-rate protocol to generate the sub-rate data stream is disclosed by on receive side (Figure 4) a SONET framer (Figure 4, element 36) removes SONET overhead and de-interleaver separates packets belonging to different streams using address byte in packet headers. See column 6, lines 4-18.

Regarding claim 49, the claimed de-serializing a serial version of sub-rate data stream and form sub-rate data stream is disclosed by input streams (GbE or FC) are

converted into 10-bit parallel streams by serializer/de-serializer (Figure 3, elements 20-1, 20-2). See column 4, lines 38-42.

Regarding claim 52, the claimed FIFO memory to provide storage for sub-rate data stream is disclosed by FIFO buffers in interleaver (Figure 3, element 30). See column 4, lines 63-67, column 5, lines 1-4.

Regarding claim 57, the claimed serializing the sub-rate data stream to produce a serial version of sub-rate data streams is disclosed by serializer/de-serializer (Figure 4, elements Serdes) at receive side.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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4. Claims 3, 14, 19, 29, 34, 45, 50, 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Azizoglu et al in view of Michel et al. US 6765933.

Regarding claims 3, 14, 19, 29, 34, 45, 50, 60, Azizoglu et al. discloses serializer/de-serializer and step of serializing/deserializing sub-rate data stream. Azizoglu et al. fails to disclose serializer/de-serializer including clock recovery circuit that recovers a sub-rate clock associated with sub-rate data stream. Michel et al. discloses SMART chip as an SDH/SONET framer technology for cell streams including clock recovery, clock synthesis functions and serializer/de-serializer functions. See column 3, lines 41-51. At the time the invention was made it would have been obvious to modify Azizoglu et al. with combined clock recovery and serializer/de-serializer functions of Michel et al. One of ordinary skill in the art would have been motivated to do this for re-timing capability on the receive side. See column 14-51.

5. Claims 4, 12, 20, 27, 35, 43, 51, 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Azizoglu et al.

Azizoglu et al. discloses converting GbE inputs into 10-bit parallel streams by a serializer/de-serializer and the 10 bit streams decoded by codecs to produce an 8 bit parallel stream where a ninth bit is added for exchanging control information. See column 4, lines 38-55. However, Azizoglu et al. does not disclose the claimed de-serializer including compression logic operable to compress ten-bit wide data to form output streams nine-bit wide as disclosed on page 15 of instant application. At the time the invention was made it would have been obvious to modify Azizoglu et al. to combine

the compression functions of its 8B/10B codecs (Figures 3, 4) into functions of its serializer/de-serializer (Figures 3, 4, elements Serdes). One of ordinary skill in the art would be motivated to do this to include indication of start, end of packet or idle channel status in the ninth bit. See column 4, lines 48-53.

6. Claims 6-8, 13, 22-24, 28, 37-39, 44, 53-55, 59, 63-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Azizoglu et al. in view of Bleickardt et al. US 5,461,622.

Azizoglu et al. disclose all of the method and apparatus limitations of the claims except for logic to determine a stuffing opportunity that indicates an amount of stuffing data to be framed, rate adapter generating a stuffing opportunity indicator such that payload framer receives stuffing opportunity and frames stuffing data into payload based on indicator.

Bleickardt et al. discloses data transmission over SONET with use of buffer and stuff control circuit (Figure 2, element 211) which inserts stuffing bytes to increase rate signal to match certain rate and inserts a Stuffing Indicator byte for use at the receiving end to control proper destuffing. Stuffing bytes occupy positions in payload in positions known to transmitter and receiver.

At the time the invention was made it would have obvious to modify Azizoglu et al. with stuff control circuit of Bleickardt et al. One of ordinary skill in the art would be motivated to do so for proper rate adjustment. See column 4, lines 37-44.

Response to Arguments

7. Applicant's arguments filed 12/14/2005 have been fully considered but are moot in view of new grounds of rejection. Examiner appreciates detailed description of prior art.

Applicant argues Azizoglu et al. does not teach amended limitation in claim 1 of a rate adapter receiving an uninterpreted sub-rate data stream and operable to, without interpretation, adapt a rate characteristic associated with a sub-rate protocol to a rate characteristic associated with a selected network protocol to generate an uninterpreted rate-adapted stream from the uninterpreted sub-rate data stream. Corresponding amendments have been made to independent claims 10,17, 32, 41, 48, 63-65. Applicant argues systems and methods of Azizoglu et al. differ from systems and methods of present invention in that "inefficient and undesirable" 8b/10b codecs are disclosed in Azizoglu which essentially interpret each stream.

Examiner respectfully disagrees with Applicant. Examiner's new grounds of rejection above states the claimed rate adapter is taught by interleaver receiving the parallel streams from serializer/de-serializer and inputs these into FIFO buffers. The interleaving logic (Figure 3, element 34-1) packetizes the data streams from buffers and interleaves the packets using statistical multiplexing to keep the aggregate bit rate of the packets below that of the SONET OC-48 payload rate.

Examiner would like to draw Applicant's attention to dependent claims 4, 12, 20, 27, 35, 43, 51, 58, which recite an serializer/de-serializer including

compression/decompression logic to compress the serial version sub-rate data stream and to decompress the sub-rate data stream to form a serial version of the stream.

Pages 11-12 of instant specification disclose an example where the serial stream contains data having a bit width of 10 bits, the compressor/encoder logic of the de-serializer that is coupled to the rate adapter, compresses the 10-bit serial data to parallel data having eight bits of data and one control bit for a width of nine bits. The de-serializer then sends parallel data to rate adapter. Azizoglu et al. discloses the 8B/10B codecs receive the 10B streams from the serializer/de-serializer (Figure 3, elements 20-1, 20-2) and output 8-bit parallel streams with a ninth bit added for control. Thus, Examiner believes that although codecs do exist in the system of Azizoglu et al., specifically coupled to the interleaver, the amended limitations regarding a rate adapter receiving and adapting uninterpreted data streams are taught by the prior art since the interleaver receives the 8-bit parallel streams from the codecs but does not perform any further encoding (interpreting) just as Applicant's invention discloses a de-serializer encoding the 10-bit stream into 8-bit parallel streams before sending stream to rate adapter. Therefore, rejection is maintained.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Russell et al. US 6,584,118 disclose payload mapping in synchronous networks.


- Latif et al. US 6,400,730 disclose transferring data between IP network devices and SCSI and fibre channel devices over an IP network.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melanie Jagannathan whose telephone number is 571-272-3163. The examiner can normally be reached on Monday-Friday from 8:00 a.m.-4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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